PATENT CLAIMS

What is claimed is:

1. A device for heat treatment of the prostate, comprising a treatment catheter with an expandable fluid reservoir and first heating means which is located within said treatment catheter and emits electromagnetic radiation for heating of the surrounding prostatic tissue, said treatment catheter being provided with a free end which is insertable through urethra into the urinary bladder of a patient and a second end connected to an energy supply unit arranged outside of the patient's body, wherein

second heating means is provided in thermal contact with the liquid in the fluid reservoir for heating of the liquid in the fluid reservoir,

said fluid reservoir is positioned external to the treatment catheter so that in its operative position it engages with and fills urethra which extends through prostate adjacent to the prostate neck 21', and

said first heating means and second heating means are operatively connected with the energy supply unit.

2. A device according to Claim 1, wherein said first heating means is provided as an antenna element emitting microwaves and said second heating means comprises an electric lead resistance.

3. A device according to Claim 2, wherein said second heating means comprises a lead resistance separated from the antenna element and provided axially displaced along the treatment catheter from said first heating means towards the free end of the treatment catheter.

4. A device according to Claim 1, wherein said first heating means is provided as a coil antenna and said second heating means comprises a lead resistance in said coil antenna.

5. A device according to Claim 1, wherein said energy supply unit comprises a microwave generator for supply of microwave energy to said first heating means and a direct current or low frequency power source for supply of electric energy to said second heating means.

6. A device according to Claim 5, wherein said first heating means is electrically connected to said second heating means and the microwave generator is operatively connected to said low frequency power source for jointly supplying microwave energy and electric energy to said first heating means and said second heating means.

7. A device according to Claim 5, wherein a first temperature sensor (23, 23', 23") is provided for measuring of temperature in the prostatic tissue and a second temperature sensor is provided for measuring of temperature in the fluid reservoir, and wherein a central control unit operatively connected to said energy supply unit is provided for controlling the supply of microwave energy to said first heating means as a function of the temperature in the prostatic tissue and for controlling the supply of electric energy to said second heating means as a function of the temperature in the fluid reservoir.

8. A device according to Claim 1, wherein said energy supply unit is connected to said first heating means and to said second heating means via an electronic unit, and wherein said electronic unit is provided for simultaneous supply of energy to the two heating means (10; 29).

9. A device according to Claim 1, wherein said energy supply unit is connected to said first heating means and to said second heating means via an electronic unit, and wherein said electronic unit is provided for non-simultaneous supply of energy to the two heating means (10; 29).

10. A device according to Claim 2, wherein said lead resistance of the antenna element coupled in series with the lead resistance of said second

heating means is in the range of 1-20 ohms, and the microwave impedance for a microwave signal supplied from the energy supply unit is approximately 50 ohms due to the inductance and capacitance of the antenna element.

11. A device according to Claim 1, wherein a feed cable connects said energy supply unit to said first heating means and to said second heating means, and wherein said feed cable is provided as a coaxial cable with an inner conductor for supply of microwave energy and electric energy and with a covering acting as a return lead.

12. A method for heat treatment of the prostate, comprising a treatment catheter equipped with an expandable fluid reservoir and first heating means which is located within said treatment catheter and emits electromagnetic radiation for heating of the prostatic urethra as well as the prostatic tissue surrounding the urethra, wherein said treatment catheter is provided with a free end which is inserted through urethra into the urinary bladder of a patient, and a second end is connected to an energy supply unit arranged outside of the patient's body, comprising the following steps:

operative connection of said first heating means to the energy supply unit,

positioning of said fluid reservoir externally to the treatment catheter so that in its operative position it will expand and engage with urethra which extends through prostate adjacent to the prostate neck 21',

heating of liquid in the fluid reservoir through second heating means which is arranged to be in thermal contact with the liquid separately from said first heating means.

13. A method according to Claim 12, comprising supply of microwave energy to said first heating means simultaneously with supply of electric energy to said second heating means.

14. A method according to Claim 13, comprising

continual measuring of the temperature of the prostatic tissue and the liquid in the fluid reservoir, and

control of the supply of microwave energy as a function of the temperature of the prostatic tissue, and control of the supply of electric energy as a function of the temperature of the liquid in the fluid reservoir.

15. A method according to Claim 12, comprising supply of microwave energy to said first heating means non-concurrently with supply of electric energy to said second heating means.

16. A method according to Claim 12, comprising heating of deep-lying prostatic tissue through emitting of microwave energy from said first heating means and destruction of the prostatic urethra, its mucosa and the closest surrounding tissue as well as the bladder base primarily via direct heating through said second heating means.